REMARKS/ARGUMENTS

Claims 163-164, 166-171, 173 and 176-210 are pending in the application, of which Claims 163, 179, and 197 are the independent claims. Claims 1-162, 172, 174, and 175 were previously cancelled without prejudice, and Claim 165 has been newly cancelled herein without prejudice. No claims have been added herein. Claims 163, 164, 166, 167, 169, 170, 176-180, 182-186, 190-194, 196-204, and 206-208 have been amended herein. No new matter is believed to be added by this paper. Entry hereof and early passage to issue are respectfully requested.

Claim Rejections – 35 USC §112

Claims 165 and 190 are rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to particularly point out the distinctly claim the subject matter which applicant regards as the invention. In particular, the Office Action asserts that there is no antecedent basis for "passive device" in claim 165 and that the phrase "comprises further comprising" in claim 190 is indefinite.

The rejection of claim 165 has been made moot by the cancellation of claim 165 herein. Claim 190 has been amended to delete the phrase "further comprising" for further clarification of the claim. Reconsideration and withdrawal of the rejections of claims 165 and 190 are therefore respectfully requested.

Claim Rejections – 35 USC §103

Claims 163-165, 168, 171, 173, 176 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Eichelberger (U.S. Patent 6,396,148) in view of Gupta (U.S. Patent 6,383,858). Claims 166-170 and 178 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Eichelberger with Gupta and further in view of Cole (U.S. Patent 5,745,984). Claim 177 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Eichelberger with Gupta and further in view of Wagner (U.S. Patent 5,196,377). Claims 179, 184, 187-194, 196-199, 201, 203, 205, 206, and 208-210 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Eichelberger with Gupta and further in view of Wachtler (U.S. Patent 6,707,124). Claims 180-183, 185, 186, 200, 202, and 204 are rejected under 35 U.S.C. 103(a) as

allegedly being unpatentable over Eichelberger with Gupta and Wachtler and further in view of Cole. Claims 195 and 207 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Eichelberger with Gupta and Wachtler and further in view of Wagner.

Amended claim 163 is drawn to a chip package comprising a die-surrounding layer and a die between a first portion of the die-surrounding layer and a second portion of the die-surrounding layer, wherein the die has a top surface substantially coplanar with a top surface of the die-surrounding layer. The chip package also includes a first dielectric layer on the top surface of the die and the top surface of the die-surrounding layer, and a patterned metal layer over the first dielectric layer, the top surface of the die and the top surface of the die-surrounding layer. The patterned metal layer is connected to the die through an opening in the first dielectric layer. The chip package also includes a comb-shaped capacitor over the first dielectric layer, and a second dielectric layer on the patterned metal layer and the comb-shaped capacitor, and over the first dielectric layer, the top surface of the die and the top surface of the die-surrounding layer.

Amended claim 179 is drawn to a chip package comprising a die-surrounding layer and a die between a first portion of the die-surrounding layer and a second portion of the die-surrounding layer. The die has a top surface substantially coplanar with a top surface of the die-surrounding layer. The chip package also includes a first dielectric layer on the top surface of the die and on the top surface of the die-surrounding layer, and a patterned metal layer over the first dielectric layer, the top surface of the die and the top surface of the die-surrounding layer, wherein the patterned metal layer is connected to a first metal pad of the die through a first opening in the first dielectric layer. The patterned metal layer is connected to a second metal pad of the die through a second opening in the first dielectric layer. The first metal pad is connected to the second metal pad through the patterned metal layer. The chip package also includes a passive device over the first dielectric layer.

Amended claim 197 is drawn to a chip package comprising a die-surrounding layer and a die between a first portion of the die-surrounding layer and a second portion of the die-surrounding layer. The die has a top surface substantially coplanar with a top surface of the die-surrounding layer. The chip package also includes a first dielectric layer on the top surface of the die and on the top surface of the die-surrounding layer and a patterned metal layer over the first

dielectric layer, the top surface of the die and the top surface of the die-surrounding layer. The patterned metal layer comprises a ground piece connected to a first metal pad of the die through a first opening in the first dielectric layer, and connected to a second metal pad of the die through a second opening in the first dielectric layer. The first metal pad is connected to the second metal pad through the ground piece. The chip package also includes a passive device over the first dielectric layer.

The applied references, either alone or in combination, are not seen to disclose or suggest the foregoing features of each of amended claims 163, 179 and 197.

With regard to claim 163, the Office Action asserts that "*Eichelberger as previously, disclosing a first insulating layer 104 coplanar with dies 102; a second insulating layer 106 over both the first insulating layer and dies; a patterned metal layer 108; and a third insulating layer 112. The difference between Eichelberger and claim 163 is a comb shaped capacitor. This difference is not patentable because Gupta suggests a comb shaped capacitor in upper level metallization to enable circuitry with substantial capacitance. It would have been obvious to have engineered an interdigitated or "comb-shaped" capacitor structure in an Eichelberger type device to enable circuitry requiring large capacitance in a small area.*" See the Office Action, pgs. 2-3.

Applicants respectfully disagree. Eichelberger teaches a patterned electroless metallization 109 is formed over a filler 104 and over integrated circuit chips 102 in a packaging-level process after the filler 104 is formed surrounding the integrated circuit chips 102. See Figs. 3A-3G of Eichelberger. Figs. 3G of Eichelberger is copied below for reference.

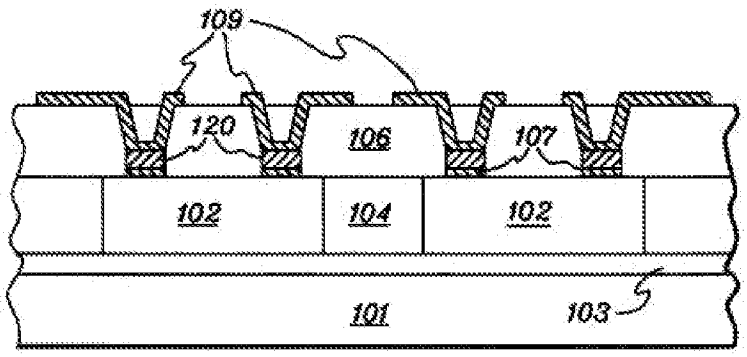


Fig. 3G from Eichelberger.

However, Gupta teaches that a capacitor structure 100 is formed over a semiconductor wafer substrate 418 in a wafer-level process. See Fig. 4 from Gupta, copied below.

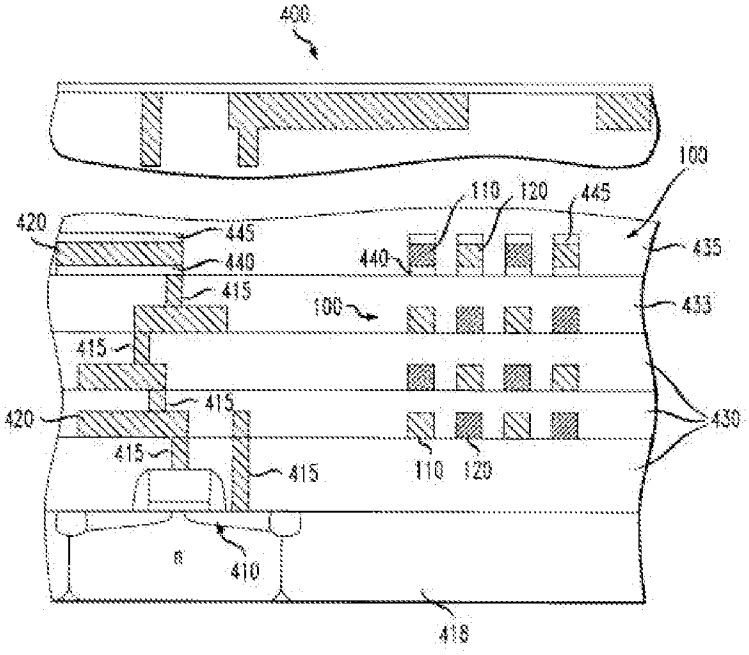


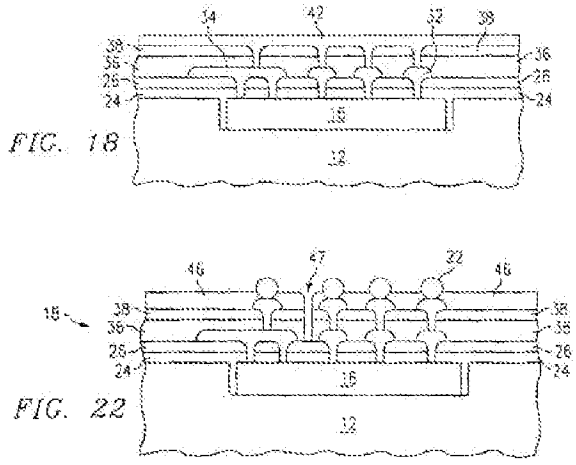
Fig. 4 from Gupta.

Gupta's capacitor structure 100 is formed before the semiconductor wafer substrate 418 is diced into multiple ICs 400 for a packaging level process. Accordingly, Gupta's capacitor structure 100 would not be considered to be formed over Eichelberger's polymer dielectric layer 106 because Gupta's capacitor structure 100 is not taught to be formed in a packaging-level

process. Thus, the combination of Eichelberger and Gupta, for which no motivation or suggestion is seen, would not produce the configuration recited in claim 163 wherein the chip package includes "*a comb-shaped capacitor over said first dielectric layer*" where the first dielectric layer is *"on said top surface of said die and said top surface of said die-surrounding layer* ." Reconsideration and withdrawal of the rejection of claim 163 are therefore respectfully requested.

With regard to claim 179, the Office Action asserts that "*In regard to connecting two pads on a single die, Wachtler in figure 22 discloses such configuration, which would have been obvious for Eichelberger in order to connect transistors or other devices on a single chip with adjacent metallization.*"

Applicants respectfully disagree. As shown in Figs. 18, 20, and 22 of Wachtler copied below, Wachtler is seen to disclose a semiconductor device 16 having a layer of dielectric 24 over which a layer of polymer 26 is optionally formed. As seen in Fig. 18, pads 32 and circuits 34 are formed over the layer of dielectric 24 and connected by vias 28 (not labeled in Fig. 18) through the dielectric 24 to the bond pads of semiconductor device 16. Additional metallized pads 44 are formed over additional layers of dielectric 36 and polymer 38 and connected to pads 32, 34 by vias 40 (not labeled in Fig. 18). A solder mask 46 is applied and solder balls 22 are attached to the metallized pads 44, producing a high density interconnect land grid array package. (Wachtler, col. 9, line 6 – col. 10, line51)



Figs. 18, 20, and 22 from Wachtler.

As previously discussed with respect to claim 163, Eichelberger does not teach a passive device being formed as part of the metallization and Gupta teaches that a capacitor is formed as part of the die and not over the dielectric that is over the die. Wachtler does not remedy this omission as Wachtler does not teach or suggest that a passive device be provided in the structure between the die 16 and the solder mask 46, or between the packaging material 12 and the solder mask 46. The combination of Eichelberger, Gupta, and Wachtler therefore does not produce the structure recited in claim 179 wherein the chip package comprises "*a passive device over said first dielectric layer*" where the first dielectric layer is *"on said top surface of said die and said top surface of said die-surrounding layer* ." Reconsideration and withdrawal of the rejection of claim 179 is therefore respectfully requested.

With regard to claim 197, the Office Action rejects claim 197 as per claim 179, asserting that "*the label "ground piece" not distinguishing over the metallization of Wachtler similarly labeled.*" See the Office Action, pg. 5. Claim 197 recites "*a passive device over said first dielectric layer*" similar to claim 179, claim 197 is patentable over the cited references for at least the reasons presented above with regard to claims 163 and 179. Reconsideration and withdrawal of the rejection of claim 197 are therefore respectfully requested.

The other claims currently under consideration in the application are dependent from the independent claims discussed above and therefore are believed to be allowable over the applied references for at least similar reasons. Because each dependent claim is deemed to define an additional aspect of the invention, the individual consideration of each on its own merits is respectfully requested.

The absence of a reply to a specific rejection, issue, or comment does not signify agreement with or concession of that rejection, issue, or comment. In addition, because the arguments made above may not be exhaustive, there may be other reasons for patentability of any or all claims that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment or cancellation of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment or cancellation.

CONCLUSION

In view of the Amendments and Remarks herein, Applicants submit that the claims are in condition for allowance and respectfully request a notice to this effect. Should the Examiner have any questions, please call the undersigned at the phone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 502624 and please credit any excess fees to such deposit account.

Respectfully submitted,
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